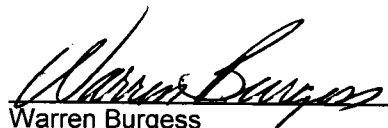


FAAD-STD-1328d  
April 27, 1998  
SUPERSEDING  
FAAD-STD-1328c, 5/1/90

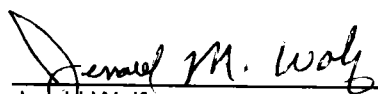
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
ENGINEERING AND PRODUCTION BRANCH  
FAA LOGISTICS CENTER STANDARD

REPAIR AND TESTING REQUIREMENTS  
FOR ELECTRONIC TEST EQUIPMENT


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DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
ENGINEERING AND PRODUCTION BRANCH  
FAA LOGISTICS CENTER STANDARD

SERVICING STANDARDS AND TEST REQUIREMENTS  
FOR GROUNDED ELECTRONIC EQUIPMENT

1. SCOPE

1.1 Scope:

This standard sets forth the general requirements for the repair and testing of electronic test equipment and is used in conjunction with detailed requirements for specific equipment as stated in the contract.

1.2 Definitions

1.2.1 Electronic Test Equipment:

Shall represent electrical and electronic test equipment, instruments, and systems.

1.2.2 Equipment:

Shall include a complete unit (such as an oscilloscope mainframe with plug-in), or a unit without subassembly (mainframe without plug-in), or just a subassembly (plug-in).

2. APPLICABLE DOCUMENTS

The following FAA specifications, standard, and forms of the issue in effect on the date of the invitation for bids or request for proposals form a part of this specification and are applicable to the extent specified herein:

# FAAD-STD-1328d

AC Form 4680-2	E&R Quality Feedback Tag
FAA Form 6032-1	Airway Facilities Modification Record
FAAD-R-1139c	Printed Circuit Boards
AC Form 6040-51	Failure & Repair History
FAAD-STD-1003d	Servicing Standards for Ground Equipment, Level A

## 2.2 Other Documents:

The following documents of the issue in effect on the date of the invitation for bids or request for proposals forms a part of this standard and is applicable to the extent specified herein.

ANSI/ASQC Z1.4	Sampling Procedures & Tables for Inspection By attributes
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The instruction book applicable to the test equipment specified in the invitation for bids or request for proposals, forms a part of this standard and is applicable to the extent specified herein.

Note: Single copies of these specifications may be requested by mail from American National Standards Institute (ANSI), 11 West 42nd Street, New York, NY 10036.

Copies of applicable FAA documents may be obtained from the contracting officer in the FAA office issuing the invitation for bids or request for proposals. The applicable test equipment instruction book may be obtained from the test equipment manufacturer.

## 2.3 Precedence:

When conflicts exist between the requirements of the contract and this standard, the contract shall take precedence. When conflicts exist between the requirements of this standard and its referenced documents, this standard shall take precedence.

## 3. REQUIREMENTS

### 3.1 General:

The electronic test equipment shall be repaired in accordance with FAAD-STD-1003d except as noted herein. All old calibration labels and seals shall be removed. All corrosion, especially battery corrosion, shall be cleaned away and damaged surfaces refinished. Damaged components shall be replaced. Handles, control knobs, ect., shall function as intended. Potentiometers and switches shall be noise-free and smooth in operation. Cathode ray tubes shall not have noticeable burn spots in the usable viewing area.

### 3.2 Printed Circuit Boards:

Printed circuit boards shall be serviced in accordance with FAAD-R-1139c, except paragraph 3.5 is deleted, and replacement coating specified in paragraph 3.4.9 shall be equal to the coating which was removed.

### 3.3 Modification:

(Delete 3.2.5 FAAD-STD-1003d). Neither the design nor the functional capabilities of the equipment shall be modified unless authorized by the contract or detailed specification. Unauthorized modifications shall be removed and the equipment restored to its original condition.

# FAAD-STD-1328d

## 3.4 Test Requirements:

The equipment and all of its parts shall perform in accordance with design criteria, specified tolerances, and functional purpose, individually and collectively, as stated in the repair contract. (Delete section 4 in FAAD-STD-1003d).

## 3.5 Replacement Parts:

Replacement parts shall be electrically and mechanically equal and physically interchangeable with the parts to be replaced. When a proper part is not available or is economically impractical to obtain, the contractor shall select a substitute part suitable for the intended use and request approval to use the parts from the FAA.

## 3.6 AC Form 4680-2:

This form, supplied by the FAA, shall be completed and attached to each repaired equipment by the contractor prior to delivering the item to the FAA. The following information shall be entered on the form:

<u>Heading</u>	<u>Information</u>
FSN (or NSN)	Equipment National Supply Number (NSN) which appears in the contract.
NOUN	Equipment manufacturer's name and part number.
DATE	The date the equipment repair was completed.
SERIAL NUMBER	The equipment's serial number.
REPAIRED BY	The Contractor's Name.
CONTRACT or P.O. NUMBER	The contract number if assigned, otherwise, purchase order number.

## 3.7 AC Form 6040-51:

Upon the completion of the repair of an item the contractor shall fill out the failure & repair history form, AC 6040-51, and return it to the contracting officer. The form shall be mailed to the FAA at the same time the repaired item is delivered to the FAA. The following is a narrative of the blocks on the form:

### CONTROL NUMBER:

This is the purchase order number of the work as assigned by FAA contracting.

### SERIAL NUMBER:

This is the unique serial number of the repaired line replaceable unit (LRU). If the number is present on the LRU it should be entered on the form. Should a number not be present on the LRU one will be furnished by the government. To receive a serial number call AML-410, Planning and Scheduling Branch, at (405) 954-5271 from 9:00 a.m. to 3:00 p.m. CST, Monday through Friday. Have the purchase order number and the NSN of the item ready and a number will be generated for the LRU. Once the serial number is received it should be transferred to the LRU using an indelible ink marker or any other type of suitable method which will stay permanently on the LRU.

### NSN (National Stock Number):

This is a unique thirteen (13) digit number assigned to an item in the Department of Defense System.

# FAAD-STD-1328d

## P/N (Part Number):

This is the manufacturer's part number for the item.

## CAGE (Commercial and Government Entity):

This code is a five (5) character code representing a particular manufacturer. This code was previously referred to as the federal supply code. Should the CAGE not be present on the purchase order or LRU it will be provided by the government. To receive the CAGE ask the FAA representative or contracting officer for information on how to obtain it.

## SHIP FROM SSC (Supply Support Code):

The ship from supply support code of the facility having the item repaired. This information is on form FAA 4250-5 and is with the item when delivered.

## FAIL CODE:

The failure code is a two (2) character code that relates to a specific failure description.

## FAIL IND:

The failed item identifier indicates that the failed item is any of the following: a circuit symbol (C), a part number (P), or a noun (N). This prevents confusing circuit assemblies and some piece parts which have the same number. It is suggested the part number (P) designator be used in most cases to reduce research time for the next occurrence of this problem.

## FAILED ITEM:

This is the actual part number, circuit symbol, and name of the items which have failed.

## REPAIR CODE:

This is a two (2) character code which identifies a specific repair action.

## REPAIR IND:

The repair item identifier indicates that the repair item is any of the following: ac circuit symbol (C), a part number (P), or a noun (N). This prevents confusing circuit assemblies and some piece parts which have the same number. It is suggested the part number (P) designator be used in most cases to reduce the research time for the next occurrence of this problem.

## REPAIRED ITEM:

This is the actual part number, circuit symbol, or name of the item which has been repaired.

## REMARKS:

This is a section for free-form text that can be used for additional repair cycle information.

## 3.8 AC Form 6031-1:

This form, supplied by the FAA, shall be completed and attached to the Form 4680-2 on each equipment by the contractor. The following information shall be entered on the form:

<u>Heading</u>	<u>Information</u>
DESCRIPTION OF ITEM	Equipment manufacturer's name and part number
SERIAL NUMBER	Serial number of equipment
FAA TYPE DESIGNATION	FAA type number when assigned
CODE	The letter "N"
TITLE OR DESCRIPTION	The notation "N/A"

## 3.9 Calibration Label:

A label, supplied by the contractor, shall be affixed to the electronic test equipment to certify that it has been calibrated to meet the requirement of paragraph 3.4. The label shall be located on the front of the equipment or at a conspicuous location where it does not interfere with operation of the equipment or cover markings. The minimum information on the label shall be:

- a) Date of calibration
- b) Date due for next calibration
- c) Name of company performing the calibration
- d) Serial number of the equipment

The date due for the next calibration shall be one year from the date of calibration, unless otherwise specified in the repair contract. The label shall be made of durable material that will adhere to the equipment surface and can be easily removed without marring the surface. Markings on the label shall be legible and permanent. Labels from previous calibrations shall be removed.

## 3.10 Calibration Seal:

After repair and testing of the electronic test equipment, a seal (or seals) supplied by the contractor shall be affixed to the equipment in such a manner that it will be broken when access is gained to the internal parts of the equipment. The seal shall be the non-reusable type to prevent reuse after it is removed or broken. The seal shall be printed with legible and permanent legend to indicate that the equipment calibration is void if the seal is broken. All seals from previous servicing shall be removed.

## 4. QUALITY ASSURANCE PROVISIONS

### 4.1 Test:

Each repaired equipment shall be tested for correct function and operation to substantiate that it conforms to paragraph 3.4.

### 4.2 Test Method:

The contractor shall provide the necessary test procedure and test data form required for electronic test equipment testing and recording of the test data results. If the test procedure and test data form normally used by the contractor satisfies the requirements of this standard, no new form will be required.

#### 4.2.1 Test Procedure:

The test procedure shall be in sufficient detail to show compliance with the requirements of paragraph 3.4. These procedures shall be devised to show this compliance without the need to break the calibration seal. That is, these tests will be "front panel" or "in cabinet" type tests.

These procedures shall identify the test equipment to be used and provide a step-by-step description of the test setup. A preliminary inspection shall be included to cover workmanship, cleanliness, etc.

The procedures shall include a detailed step-by-step performance check of the repaired item. If the equipment instruction manual performance checks are to be followed, the copyright date, title, and appropriate paragraph numbers may be referenced instead of copying the existing

document. These procedures may be the contractor's established procedure, the equipment manual, handbook, or similar document provided all requirements are met. A final checklist should supplement the contractor's test procedure to insure that all administrative details are accomplished. See Appendix II for a sample checklist.

#### 4.2.2 Test Data Form:

A test data form shall be completed for each item repaired. This form shall show in the heading the following information:

- a) Equipment Name
- b) National Stock Number
- c) Serial Number
- d) Government Purchase Order Number

The form shall be dated and signed by the contractor's test person. It shall follow the sequence of the test procedures described above, and indicate the test results in a clear and concise manner. See Appendix I for a sample test data form.

#### 4.3 Approval of Test Method:

A copy of the proposed test procedure and test data form shall be furnished to the government for approval prior to delivery of any repaired item. If the test procedure or test data form is from a readily available publication such as an equipment manual, reference to the applicable parts of the publication may be furnished instead of a copy.

#### 4.4 Testing:

On all items, the contractor shall perform all the required tests utilizing the government approved test procedure, and furnish test data on the approved form. One copy of the completed test data form shall be attached to the repaired equipment.

#### 4.5 Measuring and Test Equipment:

Measuring and test equipment shall be maintained in calibrated condition utilizing reference standards whose calibration is certified as being traceable to the National Bureau of Standards.

#### 4.6 Inspection:

At the discretion of the FAA, inspection may be accomplished at either the repair source or at the FAA Logistics Center and will include verification that the repaired item meets the electrical and mechanical performance parameters of this standard. Repaired equipment may be subjected to either 100 percent inspection, lot-by-lot sampling, or continuous sampling plans as determined by the FAA. In either case, the Acceptable Quality Level (AQL) will be 1.0 percent for critical defects, 2.5 percent for major defects, and 65 percent for minor defects.

### 5. PREPARATION FOR DELIVERY

#### 5.1 Preparation for Delivery:

The item will be prepared for delivery as provided in the contract. Delete 5.1 of FAAD-R-1139c.

## 6. NOTES

### 6.1 Information Items:

The contents of this section are only for the information of the initiator of the procurement request and are not a part of the requirements of this specification. They are not contract requirements nor are they binding on either the government or the contractor. In order for these terms to become a part of the resulting contract, they must be specifically incorporated in the contract. Any reliance placed by the contractor on the information in these subparagraphs is wholly at the contractor's risk.

### 6.2 Intended Use:

This standard is for the small purchase repair of common and special test equipment and must be used with detailed requirements for specific equipment. Detailed requirements may be detailed specification or equipment specifications given in the equipment instruction book.

### 6.3 Modifications:

This standard does not cover equipment modified in accordance with Airway Facilities Publications (AFP) Modification Handbook. Detailed requirements for modification must be included in the detailed equipment specification or contract description with specific exception to paragraph 3.3.

### 6.4 Equipment Description:

The contract or detailed specification must give a complete description of the test equipment including accessory items, detachable parts, and expendable items to be supplied with the repaired equipment. Items to be considered are test leads, probes, adapters, carrying case, detachable power cable assemblies, batteries, instruction book, and spare parts.

### 6.5 Instruction Book:

The instruction book for special test equipment is usually not available from the equipment manufacturer. In this case, the procurement request must specify that the government will furnish the book. This modifies the note in paragraph 2.2.



APPENDIX I

S A M P L E

TEST DATA

ITEM: MODULATION ELIMINATOR

NSN 5825-00-087-3310

Type/Part No.: CA-1422

Serial Number \_\_\_\_\_

Contract No.: 81-B-2468

TEST

<u>DESCRIPTION</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
1. Residual Modulation	< 4%	_____ %
2. Efficiency 15 W at TP2	TP1 > 140 Watt	_____ W
3. Cathode Current 1 and V2	< 60 ma	_____ ma
4. Hum Modulation at TP2	No detectable 60 Hz hum	_____ ( )

Tested By: \_\_\_\_\_ Date: \_\_\_\_\_

APPENDIX II

FINAL CHECKLIST

- A. Apply calibration label top.
- B. Apply calibration void seals.
- C. Complete AC Form 4680-2 as follows:
  - Noun:
  - NOUN:
  - Date: "as appropriate"
  - W.C.: "leave blank"
  - Serial Number: "as appropriate"
  - Repaired By: "company name"
  - P.O./Contract: "as appropriate"
  - Voucher #: "leave blank"
  - Item Used With: "leave blank"
  - "Do not fill out any other blanks (For FAA Use)"
- D. Complete FAA Form 6032-1.
- E. Attach both above forms to the LRU.
- F. Attach the completed test data form to the LRU. (We suggest that this and FAA Form 6032-1 be folded and stapled to AC Form 4680-2).
- G. Insure that packaging meets the contract requirements and that it is adequate to protect the LRU from shipping damage. Also, wrap the LRU in protective wrap if there is a possibility of contamination from packaging materials. (Refer to contract clause #38 if FAA supplied packing is inadequate.)